

NEW RECORDS AND SPECIES OF *LAELAPS* AND ALLIED GENERA  
FROM AUSTRALASIA (ACARI: DERMANYSIIDAE)

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(Plate II)

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*Synopsis*

Three species of *Laelaps* are described from "old endemic" Australian rodents (Muridae): *L. aella*, n. sp., from *Pseudomys gracilicaudatus*, *L. pamorphus*, n. sp., from *Zyzomys argurus* and *Z. woodwardi*, and *L. spatanges*, n. sp., from *P. hermannsburgensis* and *P. delicatulus*.

The first two, showing a full complement of 39 pairs of setae on the dorsal shield and relatively unmodified peritremes and genitoventral setae, are placed in the *nuttalli* species-group (hosts bush-rats &c.) rather than in the *finlaysoni* species-group (35 pairs of setae on dorsal shield; peritremes and anterior two pairs of genitoventral setae much abbreviated; hosts "old endemics").

The hirsute third species, with 38 pairs of setae on the dorsal shield, is also readily separable from the *finlaysoni* species-group, and is placed in the newly-defined, monotypic *spatanges* species-group.

Within the *nuttalli* species-group, *L. assimilis*, normally a parasite of bush-rats (*Rattus fuscipes* and *R. lutreolus*), is noted from the "old endemic" *Mastacomys*, which occurs in intimate ecological connexion with *R. lutreolus*. This, however, is an example of host-specificity due to the gregariousness, rather than the phylogenetic relationships, of the hosts. One new host is listed for *L. mackerrasi*, and additional figures are given for *L. rothschildi* to facilitate comparison with *L. aella*. New locality records are given for *L. nuttalli* and *L. echidninus*.

*L. hapaloti*, the sole member of the *hapaloti* species-group (37 pairs of setae on dorsal shield, basal seta on coxa I spinose as in no other Australian species) is refigured and shown to be confined to "old endemic" hopping-mice of the genus *Notomys*, two species of which are listed as new hosts.

*Australolaelaps rosamondae*, n. sp., is figured and described from the swamp wallaby, *Wallabia bicolor* (Macropodidae), in Victoria. It shows the peritremes obsolescent as in the one known species (*A. mitchelli*) from Macropodinae, but coxa II carries an immense hook as in the two known species from Potoroinae: *A. greeni* and *A. validipes*.

New hosts and records are detailed for 20 species of 12 other dermanyssid genera (*Gymnolaelaps*, *Laelapsella*, *Mesolaelaps*, *Haemolaelaps*, *Neolaelaps*, *Domrownysus*, *Eulaelaps*, *Raillieita*, *Bewsiella*, *Ornithonyssus*, *Rallinyssus*, and *Larinyssus*).

INTRODUCTION

Recent accessions have yielded the four new species of dermanyssid mites from Australian mammals described below. To facilitate their discussion, several new host-records for related parasites are also detailed. Infestations of captive, as distinct from wild, animals are noted.

The morphological terms used are largely those of Evans and Till (1965) and Lindquist and Evans (1965), while the hosts are listed after Ride (1970) and Leach [1958]. To avoid repetition, the illustrations (on which one division on the scales=100 $\mu$ ) are generally arranged as follows (the few exceptions are obvious). The leading edge of the legs faces the top of the page, and the dorsal view is figured above the ventral. The capitula are drawn in ventral view, with the right palp shown dorsally.

Genus GYMNOLAELAPS Berlese

*Gymnolaelaps* Berlese, 1916, *Redia*, 12: 170. Type-species *Laelaps myrmecophilus* Berlese, 1892.

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Steyskal (1970) pointed out that only large lexicons give both the common Greek feminine noun *λαίλαψ* (a tempest), and the rare Latin masculine noun *Laelaps* (a dog in Ovid's *Metamorphoses*). Accordingly, the usage of classical acarologists varied, Michael preferring the feminine and Berlese the masculine (Tipton, 1960). However, among the species of *Laelaps* Koch is *L. festinus* Koch, a clear example of a Latin adjective in the masculine, and I therefore revert to this usage (see Art. 30 in Stoll *et al.*, 1964, and Domrow, 1963a).

*Gymnolaelaps annectans* Womersley

*G. annectans* Womersley, 1955, *Aust. J. Zool.*, 3 : 419.

*Hypoaspis nidicorva* Evans and Till, 1966, *Bull. Br. Mus. nat. Hist.*, 14 : 179.

*New synonymy.*

*New host-records.*—One ♀ from dusky antechinus, *Antechinus swainsonii* (Waterhouse) (Marsupialia : Dasyuridae), Cradle Mountain, Tas., 20.iii.1963, R. H. Green.

Two ♀♀ from swamp antechinus, *A. minimus* (Geoffroy), Waratah, Tas., vi.1963, R.H.G.

Two ♀♀ from eastern swamp-rat, *Rattus lutreolus* (Gray) (Rodentia : Muridae), Mount Nebo, Qd, 12.xi.1964, E. H. Derrick.

*Notes.*—As the classification of the genera centred around *Hypoaspis* Canestrini "requires radical revision" (Evans and Till, 1966), no new combinations are proposed, either here or in *Haemolaelaps* Berlese.

Genus LAELAPSELLA Womersley

*Laelapsella* Womersley, 1955, *Aust. J. Zool.*, 3 : 416. Type-species *L. humi* Womersley, 1955.

*Laelapsella humi* Womersley

*L. humi* Womersley, 1955, *Aust. J. Zool.*, 3 : 417.

*New host-records.*—Seven ♀♀ from brush-tailed possum, *Trichosurus vulpecula* (Kerr) (Marsupialia : Phalangeridae), Pomonal, Vic., 31.iii.1968, J. H. Seebeck.

Four ♀♀ from southern bush-rat, *Rattus fuscipes* (Waterhouse), Loch Valley, Vic., iii.1963, R. M. Warneke. Three ♀♀ from *R. fuscipes*, Kangaroo Island, S.A., 11.ix.1967, S. H. Wheeler.

Two ♀♀ from Norway rat, *Rattus norvegicus* (Berkenhout), Hobart, Tas., 6.xi.1962, B. C. Mollison.

Twenty-three ♀♀ from broad-toothed rat, *Mastacomys fuscus* Thomas (Muridae), Dargo Road, Mount St. Bernard, Vic., 14.ii.1967, J.H.S.

Genus MESOLAELAPS Hirst

*Mesolaelaps* Hirst, 1926, *Proc. zool. Soc. Lond.*, 1926 : 840. Type-species *Laelaps (M.) anomalus* Hirst, 1926.

*Mesolaelaps australiensis* (Hirst)

*L. (M.) australiensis* Hirst, 1926, *Proc. zool. Soc. Lond.*, 1926 : 840.

*New host-records.*—Twelve ♀♀ from white-backed swallow, *Cheramoecca leucosterna* (Gould) (Passeriformes : Hirundinidae), Lake Victoria, between Ivanhoe and Broken Hill, N.S.W., 24.iv.1968, K. G. Simpson.

Three ♀♀ from Mitchell's hopping mouse, *Notomys mitchellii* (Ogilby) (Muridae), Pier Millan, between Ouyen and Sea Lake, Vic., 13.ii.1966, R.M.W.

Six ♀♀, *Rattus fuscipes*, Kangaroo Island, S.A., ii.1969 and 9.iii.1967, S.H.W.

*Mesolaelaps bandicoota* (Womersley)

*Hypoaspis bandicoota* Womersley, 1956, *J. Linn. Soc.*, 42 : 573.

*New host-records.*—One ♀ from quoll, *Dasyurus viverrinus* (Shaw) (Dasyuridae), Gladston, Tas., vii.1964, R.H.G.

Two ♀♀, *Rattus fuscipes*, Kangaroo Island, S.A., ii.1969 and 25.vi.1967, S.H.W.

*Notes*.—This specific name is best considered a noun in apposition to the generic name.

*Mesolaelaps antipodanus* (Hirst)

*L. (Heterolaelaps) antipodiana* Hirst, 1926 (*sic*), *Proc. zool. Soc. Lond.*, 1926 : 838.

*New host-record*.—Five ♀♀ from potoroo, *Potorous tridactylus* (Kerr) (Marsupialia : Macropodidae), near Pomonal, Vic., 17.vi.1964, R.M.W.

*Notes*.—This species and *Haemolaelaps marsupialis* (Berlese) normally parasitize various bandicoots (Marsupialia : Peramelidae), but these and potoroos are closely associated ecologically, at least in S.E. Queensland.

*Mesolaelaps sminthopsis* (Womersley)

*L. (L.) sminthopsis* Womersley, 1954, *Rec. S. Aust. Mus.*, 11 : 117.

*New host-records*.—Five ♀♀ and one nymph from nesting material of Leadbeater's possum, *Gymnobelideus leadbeateri* McCoy (Marsupialia : Petauridae), Loch Valley, Vic., 29.vii.1963, R.M.W.

Eight ♀♀ from common dunnart, *Sminthopsis murina* (Waterhouse) (Dasyuridae), Mount Clay, Vic., 26.vii.1968, J.H.S.

*Notes*.—This species is normally a parasite of various marsupial mice (Dasyuridae).

Genus HAEMOLAE LAPS Berlese

*Haemolaelaps* Berlese, 1910, *Redia*, 6 : 261. Type-species *Laelaps (H.) marsupialis* Berlese, 1910.

*Haemolaelaps casalis* (Berlese)

*Iphis casalis* Berlese, 1887, *Acari, Myriapoda et Scorpiones hucusque in Italia reperta*, 38 : 8. Padua.

*New host-record*.—Nineteen ♀♀ and one deutonymph from uniform swiftlet, *Collocalia vanicorensis* (Quoy and Gaimard) (Apodiformes : Apodidae), Gatop, Finschhafen Subdistrict, N.G., x.1960, B. McMillan.

*Haemolaelaps fahrenheitzi* (Berlese)

*L. (H.) fahrenheitzi* Berlese, 1911, *Redia*, 7 : 432.

*New host-record*.—Two ♀♀ from fairy prion, *Pachyptila turtur* (Kuhl) (Procellariiformes : Procellariidae), Albatross Island, Tas., 24.i.1973, R.H.G.

*Notes*.—This cosmopolitan nidophile was most recently redescribed by Till (1963) and Evans and Till (1966). The present specimens show ratio length : breadth tarsus IV = 6, setae  $J_1$  extending slightly beyond bases of  $J_2$  (now lost), chelae 35 $\mu$  long, coronal filaments uniformly long, margin of dorsal shield "double", and pilus dentilis typical of *H. fahrenheitzi*. They cannot, therefore, be identified with *H. pachyptilae* Zumpt and Till, 1956.

*Haemolaelaps marsupialis* (Berlese)

*L. (H.) marsupialis* Berlese, 1910, *Redia*, 6 : 261.

*New host-record*.—Two ♀♀ from *Potorous tridactylus*, near Pomonal, Vic., 17.vi.1964, R.M.W.

*Notes*.—See note on *Mesolaelaps antipodanus*.

*Haemolaelaps flagellatus* Womersley

*H. flagellata* Womersley, 1958 (*sic*), *Proc. Linn. Soc. N.S.W.*, 82 : 300.

*New host-record*.—Five ♀♀ from echidna, *Tachyglossus aculeatus* (Shaw) (Monotremata : Tachyglossidae), Kelso, Tas., 17.ii.1961, B.C.M.

*Notes*.—The movable chela in this species is bidentate (apart from the tip).

## Genus LAELAPS Koch

*Laelaps* Koch, 1836, *Deutschlands Crustaceen, Myriapoden und Arachniden*, 4: 19. Regensburg: Herrich-Schäffer. Type-species *L. hilaris* Koch, 1836.

*Laelaps mackerrasi* Domrow

*L. mackerrasi* Domrow, 1961, *Proc. Linn. Soc. N.S.W.*, 86: 70.

*New host-record*.—Common on mottle-tailed Cape York rat, *Rattus leucopus* (Gray) (subspecies *cooktownensis* Tate), Dayman (Rocky) Point and Daintree Road, N of Mossman, Qd, vi.1970 and v.1971, R. Domrow and R. W. Campbell.

*Laelaps nuttalli* Hirst

*L. nuttalli* Hirst, 1915, *Bull. ent. Res.*, 6: 183.

*New locality record*.—Four ♀♀ from Pacific islands rat, *Rattus exulans* (Peale), Nouankao River, Eromanga, New Hebrides, 11.vii.1971, A. G. Marshall. Two ♀♀ and one ♂ from *R. exulans*, Tagabe, Vila, Efate, New Hebrides, 17.vii.1971, A.G.M. (The Royal Society and Percy Sladen Expedition to the New Hebrides, 1971).

*Laelaps assimilis* Womersley

*L. assimilis* Womersley, 1956, *J. Linn. Soc.*, 42: 557.

*New host-records*.—Several specimens from *Mastacomys fuscus*, Carlisle, Otway Ranges, Vic., 30.ix.1965, J.H.S. Numerous specimens from two *M. fuscus*, Penny's Saddle, Vic., 9.vi.1968, J.H.S. Numerous specimens from three *M. fuscus*, Kalorama, Vic., 20–23.ix.1968, J.H.S.

Five ♀♀ and four ♂♂, *Rattus fuscipes*, Kangaroo Island, S.A., ii.1969 and 9.iii.1967, S.H.W.

*Notes*.—This species is widespread on native species of *Rattus* Fischer, including *R. lutreolus* (see Domrow, 1965). The present records, however, are a case of host-specificity determined (at least initially) by the gregariousness, rather than the phylogenetic relationships, of the hosts, since *Mastacomys* Thomas, an "old endemic" (Ride, 1970), occupies the same habitat, and even the same runways, as *R. lutreolus*. Strandtmann (1958, 1959) noted the same phenomenon in dermanyssid nasal mites of birds: penguins and waders in marine environments harbour species of *Rhinonyssus* Trouessart distinct from those in ducks and grebes in fresh water.

*Laelaps echidninus* Berlese

*L. (Iphis) echidninus* Berlese, 1887, *Acari, Myriapoda et Scorpiones hucusque in Italia reperta*, 39: 1. Padua.

*New locality record*.—One ♀ from *Rattus exulans*, Tagabe, Vila, Efate, New Hebrides, 17.vii.1971, A.G.M. One ♀ from *R. exulans*, Narabut, New Hebrides, 23.x.1971, A.G.M. (RSPSE).

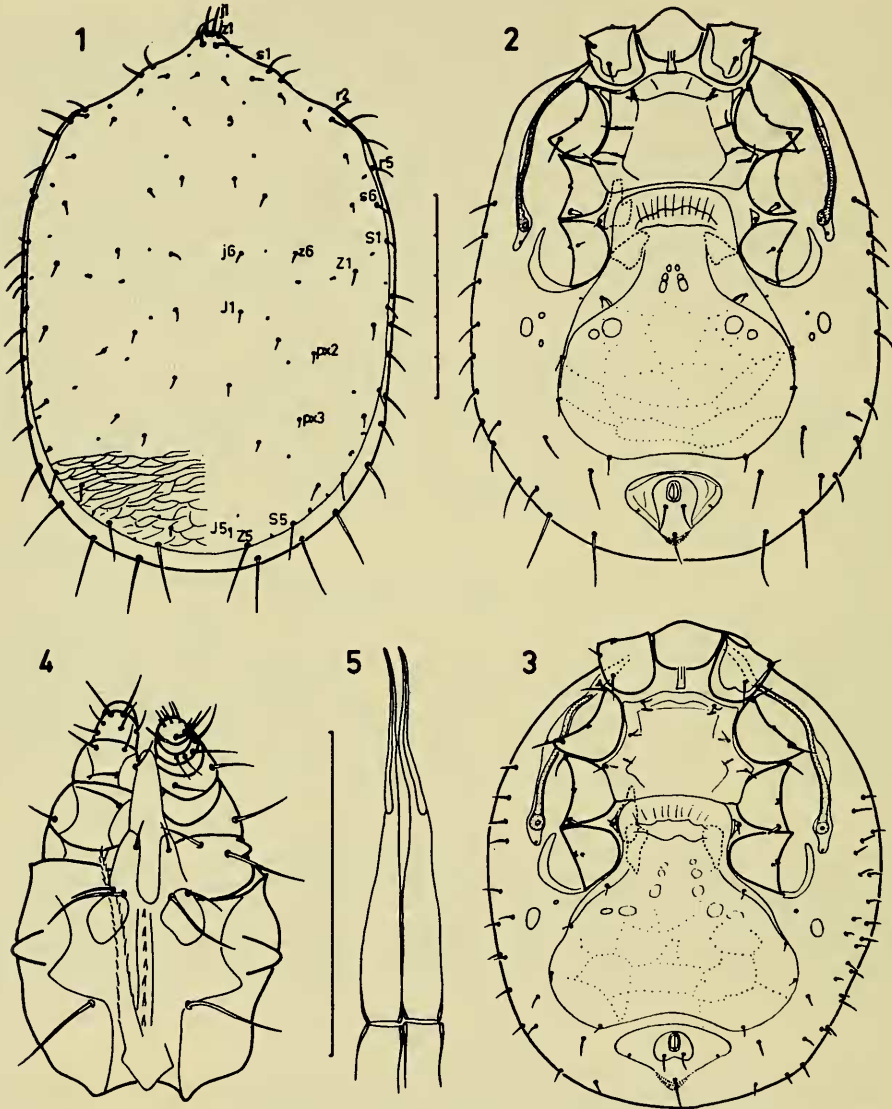
*Laelaps aella*, n. sp.

(Figs 1–2, 6–12)

*Types*.—Holotype ♀ and 20 paratype ♀♀ from eastern chestnut native-mouse, *Pseudomys gracilicaudatus* (Gould) (Muridae), Mt. Brockman, N.T., 25.vii.1971, J. H. Calaby. Deposited in Australian National Insect Collection, CSIRO, Canberra (13, including holotype) and QIMR (8).

*Female*.—Capitulum with *c* falling short of deutosternum; *h*1–2 slightly, and *h*3 considerably, longer. Deutosternal groove with six rows of denticles, mostly single. Cornicles well-formed. Epistome diaphanous but extensive, reaching forward to middle of palpal genua; marbled discally at level of femora. Palpi (trochanter-tibia, and almost certainly tarsus) with setation called for by Evans and Till (1965) for dermanyssids in general; genu with *all* spatulate.

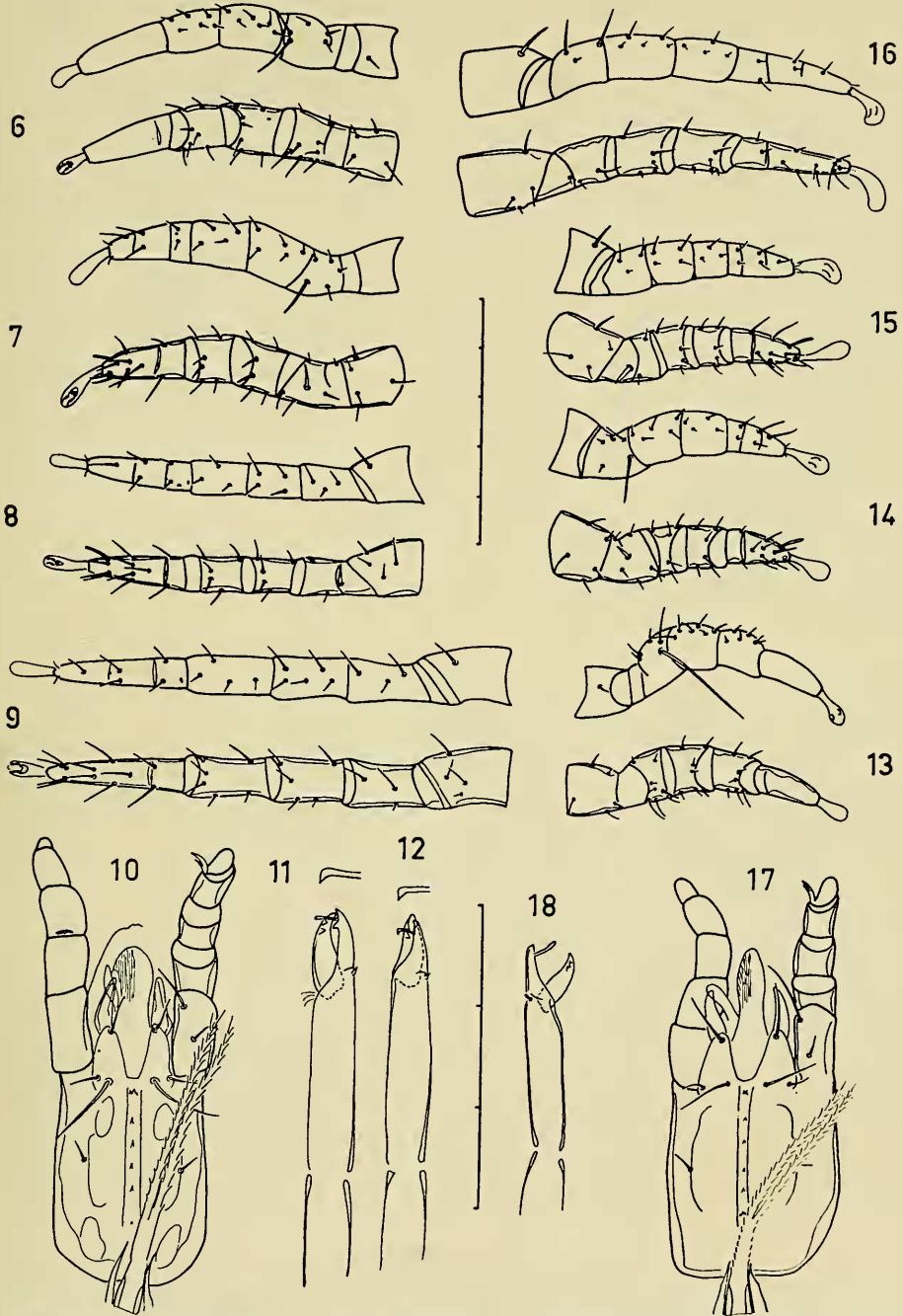
Claws bifid. Chelicerae fully formed. Fixed digit with two subterminal denticles and pilus dentilis (latter protruding externally, abruptly bent and foliate at tip); with setule and pore near base. Movable digit hyaline and straight internally, but bidentate externally to receive tip of fixed digit; corona present.



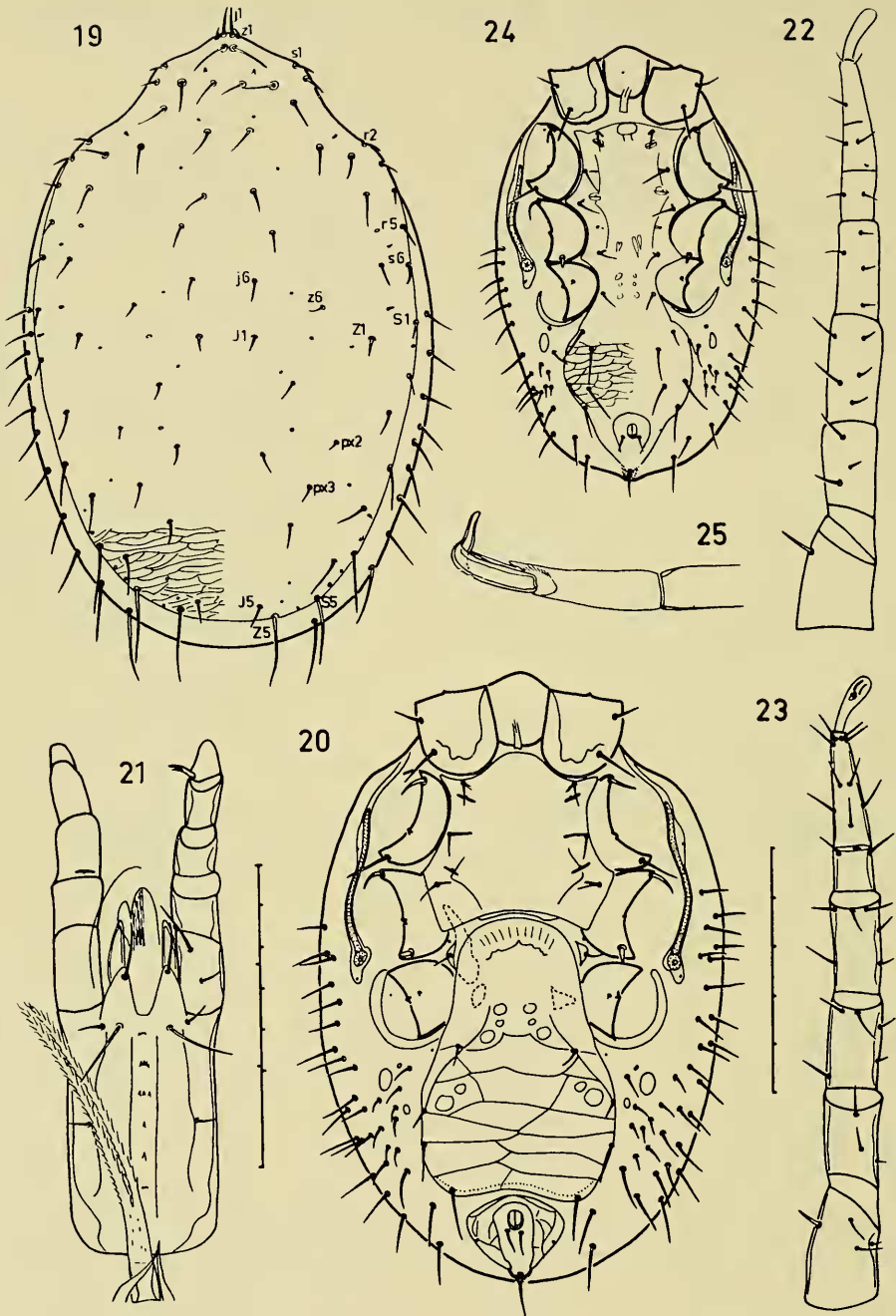
Figs 1-2. *Laelaps aella* ♀. 1, Dorsum of idiosoma. 2, Venter of idiosoma. Fig. 3. *L. rothschildi* ♀. Venter of idiosoma. Figs 4-5. *Australolaelaps rosamondae* ♀. 4, Capitulum. 5, Chelicerae in ventral view.

Idiosoma parallel-sided, rounded posteriorly, but angulate anteriorly; 1,280-1,370 $\mu$  long normally, but only 1,260 $\mu$  in freshly moulted specimen. Dorsal shield with similar outline; with transverse striations, paired muscle insertions, and pores (shield around pores immediately in front of S4 and S5 not weakened and transparent over large circular area). Setae in 39 pairs

(vertical, subvertical, and humeral clusters rather more prominent than usual); short except for Z5. Little dorsal marginal cuticle free, with about 10 pairs of setae of increasing length posteriorly.



Figs 6-12. *Laelaps aella* ♀. 6-9, Legs I-IV. 10, Capitulum. 11-12, Left chelicera in dorsoexternal and dorsal view. Figs 13-18. *L. rothschildi* ♀. 13-16, Legs I-IV. 17, Capitulum. 18, Right chelicera in dorsoexternal view.



Figs 19-23. *Laelaps pamorpha* ♀ from *Zyzomys argurus*. 19, Dorsum of idiosoma. 20, Venter of idiosoma. 21, Capitulum. 22-23, Leg IV. Figs 24-25. *L. pamorpha* ♂ from *Z. argurus*. 24, Venter of idiosoma. 25, Right chelicera in ventral view.

Tritosternum narrow and undistinguished, reaching forward to *h1*; base flanked by two small, narrow, and diaphanous processes. Sternal shield wider than long, with anterior margin biconvex and posterior margin concave; internally denser around margins; surface virtually textureless. Six sternal setae very small, with canaliculus leading into body cavity from base of each; four sternal pores distinct, each with canaliculus. Endopodal shields only partially visible externally, but provided with larger apodemes extending under posterolateral corners of sternal shield; metasternal setae set on external portions; pores free in cuticle. Genitoventral shield roundly expanded behind coxae IV, slightly concave posteriorly to follow contour of anal shield; with distinct sigmoid lines isolating genital setae, and very weak, open pattern discally. Genital setae and three pairs of usurped ventral setae set on shield; all small and subequal. Genital pores minute, free in cuticle. Operculum rayed, supported by two genital apodemes. Anal shield slightly wider than long, striate and dense marginally; anus set in transparent central area, in front of all three subequal anal setae. Metapodal shields rounded, set outside two pairs of smaller plaques. Ventral cuticle with about 15 pairs of setae of increasing length posteriorly. Peritremes reaching forward to anterior margins of coxae II; borne on narrow shields fused vertically to dorsal shield and extended posteriorly, but not far enough to fuse with crescentic exopodal shields IV.

Legs with setation called for by Evans and Till (1965) for dermanyssids in general and for *L. echidninus* Berlese in particular (*i.e.*, one additional *pl* seta on genu IV, 2-5/1-2). Coxa III with *pv* spur-like. Trochanters I-II with *al*, and III-IV with *al* and *d*, strengthened, but always sharply pointed. Femora I-II with *pd1* longer, II-III with *av* and *v*, respectively, very strong, but still sharply pointed (tip often broken off, particularly on II). Tarsi II-IV with *ad1* and *pd1* minute; II-III with *al1* blunt. Tarsus I not examined. Coxa I without apodeme.

*Male and immatures.*—Unknown.

*Notes.*—*L. aella* is closely related to *L. rothschildi*, but differs in the decidedly less expanded contours of the genitoventral and anal shields. Further, the distinct transparent zone about the anus is open to the cribrum in the former, but entire in the latter.

The specific name is a Greek noun ( $\acute{\alpha}\epsilon\lambda\lambda\alpha$ , a stormy wind), and stands in apposition to the generic name. It was suggested by  $\lambda\alpha\iota\lambda\alpha\psi$  (a dark, furious storm), but see note on *Gymnolaelaps*.

#### *Laelaps rothschildi* Hirst

(Figs 3, 13-18)

*L. rothschildi* Hirst, 1914, *Trans. zool. Soc. Lond.*, 20: 325.

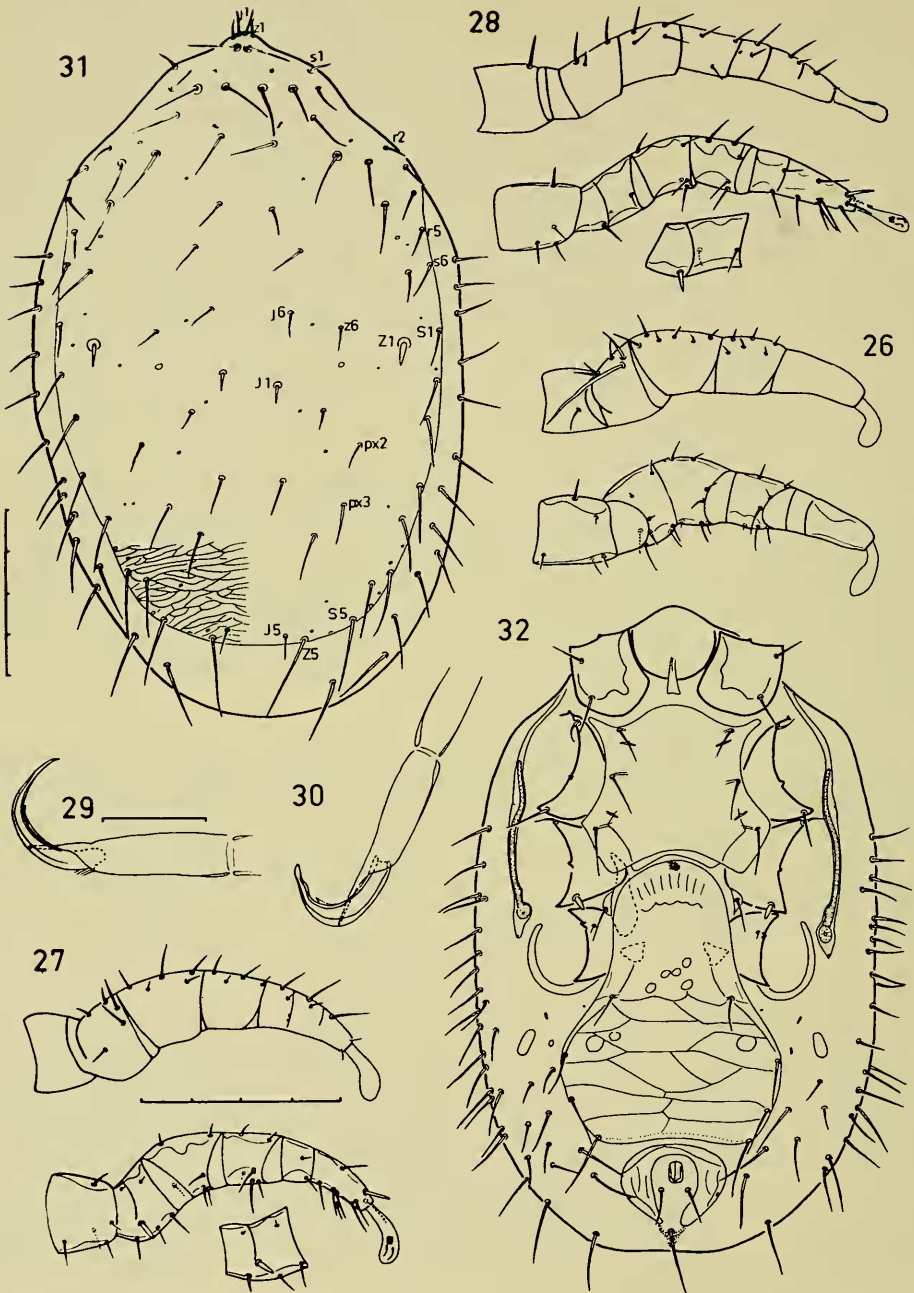
*Notes.*—No new records of this common parasite of *Melomys* Thomas and *Uromys* Peters (Muridae) in New Guinea and coastal NE Australia are to hand. However, with increasing realization of the value of the setal formulae of the appendages, these have been figured for comparison with the similar *L. aella*. Additional references are Domrow and Smith (1956), Domrow (1958, in which the "large grey mouse" is undoubtedly an immature fawn-footed melomys, *M. cervinipes* (Gould)), and Domrow (1963*b*, in which the setation of the dorsal shield of the female is correctly figured). Domrow (1962, 1967) discusses gigantism, which occurs particularly in specimens from *Uromys*.

#### *Laelaps pammorphus*, n. sp.

(Figs 19-32)

*Types.*—Holotype ♀ and 10 paratype ♀♀ from common rock-rat, *Zygomys argurus* (Thomas) (Muridae), Block Waterhole, Nicholson River, N.T., 29.viii.1967, B. Bolton and S. Parker. Deposited in ANIC. Allotype ♂ and 11 paratype ♀♀,





Figs 26–28. *Laelaps pammorphus* ♀ from *Z. argurus*. Legs I–III, with insets of femora II–III from specimen from *Z. woodwardi*. Figs 29–30. *L. pammorphus* ♂ from *Z. argurus*. Left chelicera in external and dorsoexternal views. Figs 31–32. *L. pammorphus* ♀ from *Z. woodwardi*. 31, Dorsum of idiosoma. 32, Venter of idiosoma.

*Z. argurus*, Border Waterhole, N.T. (NW of Camooweal, Qd), 31.viii.1967, A. Nicholls. Deposited in ANIC (allotype) and QIMR (remainder). Seventeen ♀♀ and nine ♂♂ (not types), *Z. argurus*, "Springvale", N.T. (NW of Camooweal, Qd), 18–20.viii.1967, H. Dimpel, S.P., and A.N.

Five ♀♀ (not types) from Woodward's rock-rat, *Z. woodwardi* (Thomas), Mt. Brockman, N.T., 28.vii.1971, J.H.C.

Numerous specimens (not types) of both sexes, *Z. argurus* and *Z. woodwardi*, Nourlangie Rock, western Arnhem Land, 9.xi.1972, J.H.C.

*Female*.—Capitulum with *c* falling short of deutosternum; *h*1–2 slightly, and *h*3 considerably, longer. Deutosternal groove with six rows of denticles, frequently multiple. Cornicles, epistome, palpi, and claws as in *L. aella*. Chelicerae as in *L. aella*, but pilus dentilis abruptly bent and foliate at tip.

Idiosoma oval, rounded posteriorly; 1,480–1,590 $\mu$  long normally, but only 1,410 $\mu$  in freshly moulted specimens. Dorsal shield of similar outline; with striations, muscle insertions, and pores (including shield around pores immediately in front of *S*4 and *S*5) as in *L. aella*. Setae in 39 pairs, rather short except posterolaterally; some anterior *j* and *z* setae set in exaggerated alveoli; *J*1 and *Z*1 slightly thickened. Narrow band of dorsal marginal cuticle free, with about 10 pairs of setae of increasing length posteriorly.

Tritosternum as in *L. aella*. Sternal shield subquadrate, with anterior margin strongly convex and posterior margin concave; internally denser around margins; surface virtually textureless. Six sternal setae very small, with canaliculus leading into body cavity from base of each; four sternal pores distinct. Endopodal shields and metasternal complex as in *L. aella*. Genitoventral shield somewhat expanded and subquadrate behind coxae IV, slightly concave posteriorly as in *L. aella*; with sigmoid lines isolating genital setae and transverse discal striae both distinct. Genital setae and three pairs of usurped ventral setae set on shield; anterior two pairs barely half as long as posterior two pairs. Genital pores and operculum as in *L. aella*. Anal shield slightly longer than wide, striate and denser marginally; anus set in transparent central area in front of two adanal setae rather smaller than postanal seta. Metapodal shields as in *L. aella*. Ventral cuticle with about 30 pairs of setae of increasing length marginally. Peritremes reaching forward only to middle of coxae II, otherwise as in *L. aella*.

Legs with setation called for by Evans and Till (1965) for dermanyssids in general and for *L. echidninus* in particular. Coxa III with *pv* spur-like. Trochanters I–II with *al*, and III–IV with *al* and *d* strengthened, but always sharply pointed. Femur I with *pd*1 considerably, and *ad*1 slightly, elongate; II with *av* spur-like. Tarsi II–IV with *ad*1 and *pd*1 minute; II–III with *al*1 blunt. Tarsus I not examined. Coxa I without apodeme.

*Male*.—Capitulum as in ♀. Fixed digit of chelicera tapering, very weak, and edentate. Movable digit almost entirely obliterated by strong spermatodactyl, which is abruptly bent dorsad at mid-length. Corona present.

Idiosoma 1,040–1,095 $\mu$  long. Dorsum as in ♀, but only one specimen shows full complement of 39 pairs of setae on dorsal shield (*px*3 missing on one side of six specimens; *px*3 missing on both sides of two specimens; *px*3 missing on both sides, and *J*3 on one side, of one specimen).

Holoventral shield expanded behind coxae IV, with about five pairs of usurped ventral setae; surface largely reticulate, but most strongly so on ventral area. Genital aperture normally placed. Venter otherwise as in ♀; cuticle with about 20 pairs of setae of increasing length marginally.

Legs as in ♀.

*Immatures*.—Unknown.

*Notes*.—The above description applies to specimens from *Z. argurus* (type-species of the subgenus *Zyzyomys* Thomas). Those from *Z. woodwardi* (type-

species of the subgenus *Laomys* Thomas) differ in degree in certain points (setae on dorsal shield longer, and J1 and Z1 stouter; seta *v* on femur III spur-like; pilus dentilis more amorphous), but are assigned to the same species.

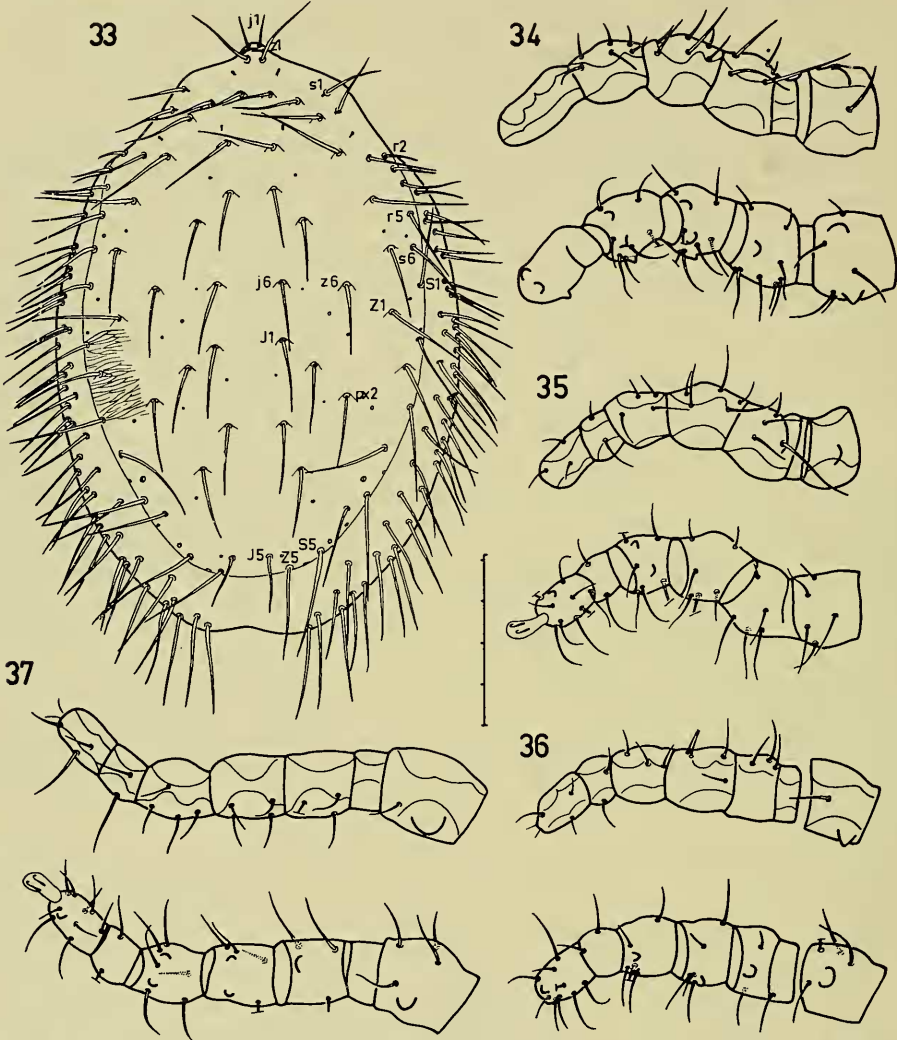


Fig. 33. *Laelaps stantanges* ♀ from *Pseudomys delicatulus*. Dorsum of idiosoma. Figs 34-37. *Australolaelaps rosamondae* ♀. Legs I-IV (seta *al* 2 on femur II and setae *ad* 1 and *pd* 1 on tarsus II neither detected nor necessarily absent).

This was written before I had seen the material from Nourlangie Rock noted above. The collector writes (*in litt.*, 14.xii.1972): "All... the... *Zyzomys* were collected on the same trapline at the same time. Extreme care was taken to avoid contamination and different equipment was used to process each species." The differences noted above can therefore be confirmed. They are, however, minor and best ascribed to physiologically induced intraspecific variation.

*L. pamorphus*, with 39 pairs of setae on the dorsal shield, runs to couplet 7 in Domrow's (1965) key, but females differ markedly from those of the two

species included (*L. mackerrasi* and *L. southcotti* Domrow, 1958) by their enlarged sternal and genitoventral shields, and the spur-like seta *av* and *v* on femur II and III, respectively. Males in this genus are nondescript.

The specific name is a Greek adjective (*παμμορφος*, assuming all forms). It refers to the variability of the setae (particularly the short, stout *J1* and *Z1*) on the dorsal shield.

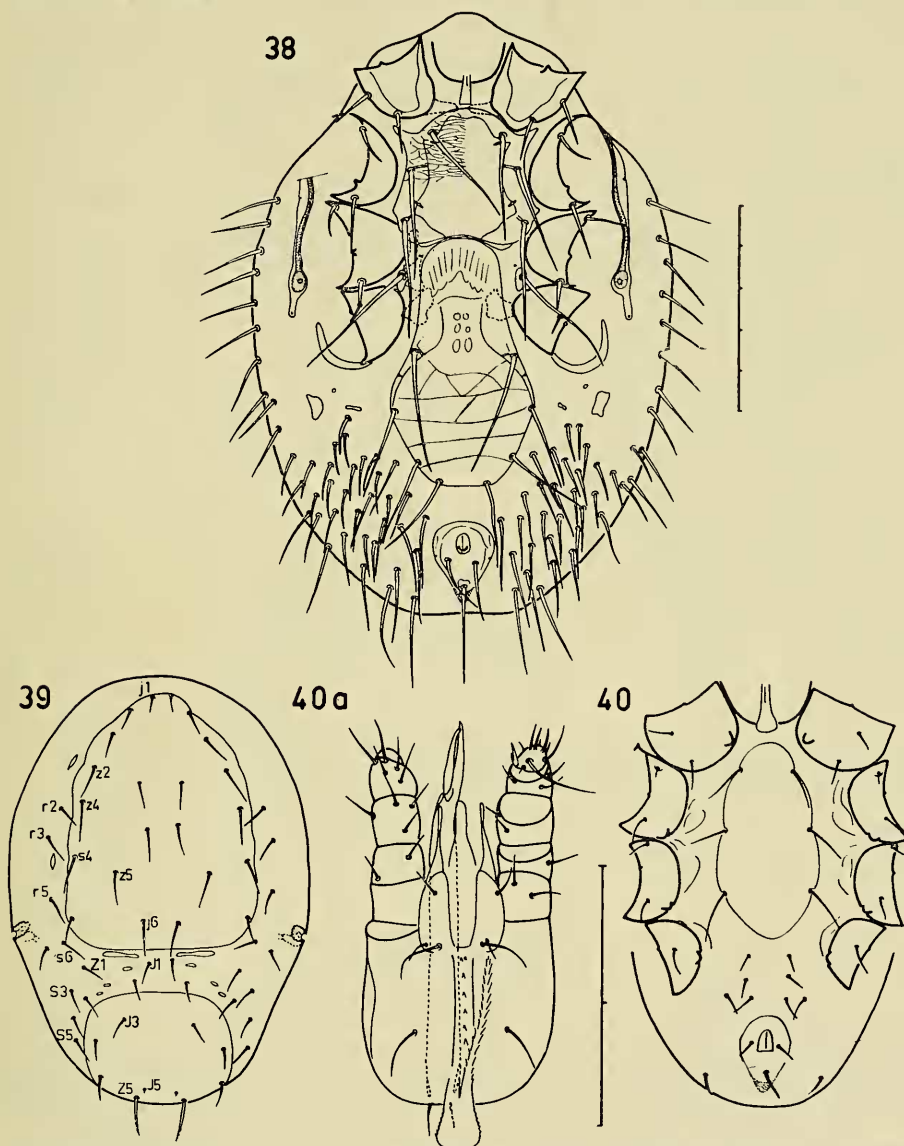


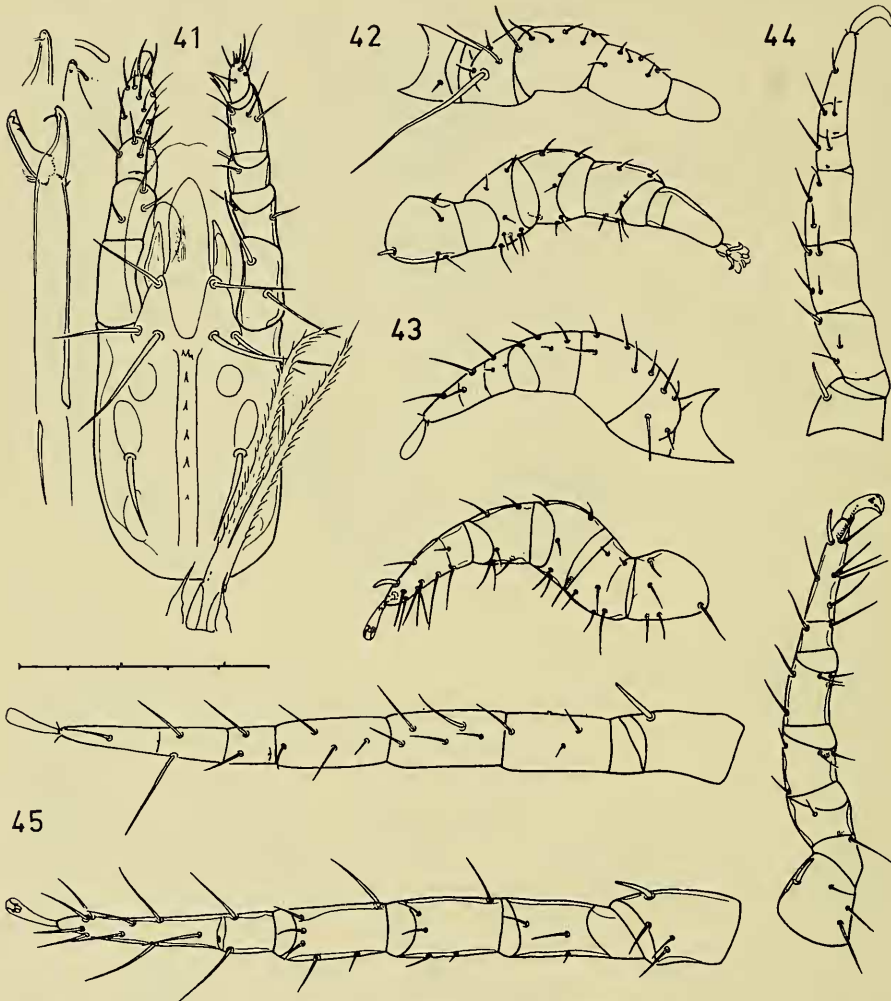
Fig. 38. *Laelaps spatanges* ♀ from *Pseudomys delicatulus*. Venter of idiosoma. Figs 39–40. *Australolaelaps mitchelli* protonymph from *Macropus rufogriseus*. 39, Dorsum of idiosoma. 40, Venter of idiosoma. Fig. 40a. *A. mitchelli* deutonymph from *M. rufogriseus*. Capitulum.

*Laelaps spatanges*, n. sp.

(Figs 33, 38, 41–45)

*L. hapaloti* Womersley, 1937, *Parasitology*, 29: 532, *partim* (series from Basedow Range).

*Types*.—Holotype ♀ and three paratype ♀♀ from pebble mound mouse, *Pseudomys hermannsburgensis* (Waite), Yuendumu, N.T., 2-6.ix.1966, P. F. Aitken. Deposited in South Australian Museum, Adelaide. Two paratype ♀♀ from *P. hermannsburgensis*, Adelaide, S.A., 14.ii.1967, D. R. Smyth and C. M. Philpott (animals originally captured in northern S.A.—“was severe outbreak of this mite in laboratory”). Deposited in SAM.



Figs 41-45. *Laelaps spatanges* ♀ from *Pseudomys delicatulus*. 41, Capitulum, with insets of left chelicera in dorsoexternal view and tips of both fixed digits in ventral view. 42-45, Legs I-IV.

Two paratype ♀♀ from little native-mouse, *P. delicatulus* (Gould), Victoria, Port Essington, N.T., 9.vii.1965, J.H.C. Deposited in ANIC. Two paratype ♀♀ from *P. delicatulus*, Mt. Brockman, N.T., 25.vii.1971, J.H.C. Deposited in QIMR.

Five paratype ♀♀ (not three as stated by Womersley, 1956) from *Pseudomys* sp., Wallara North, Basedow Range, N.T., 1932, H. H. Finlayson. Deposited in SAM (3) and QIMR (2).

*Female*.—Capitulum with *c* rather shorter than interval between them; *h1*–*2* of similar length, but weaker; *h3* half as long again. Deutosternum, cornicles, epistome, palpi, and claws as in *L. aella*. Chelicerae slender, but fully formed; as in *L. aella*, but pilus dentilis short and slightly expanded at tip.

Idiosoma 1,275–1,435 $\mu$  long, elongate-oval, slightly emarginate posteriorly in engorged specimens. Dorsal shield with similar outline (but always entire terminally) and narrowly transverse striations. Muscle insertions and pores (including shield around pores immediately in front of *S4* and *S5*) as in *L. aella*. Setae in 38 pairs (lacking one pair of *px*; *J4* doubled on right side of one specimen), long except for *z1*. Dorsal marginal cuticle quite extensive, with about 40 pairs of long setae.

Tritosternum as in *L. aella*. Sternal shield subquadrate, with anterior margin convex and posterior margin concave; internally denser around margins; with fine transverse reticulations over entire surface. Six sternal setae as long as shield, with canaliculus leading into body cavity from base of each; four sternal pores distinct. Endopodal shields and metasternal complex as in *L. aella*. Genitoventral shield subpentagonal behind coxae IV, with weak superficial markings as figured. Genital setae, attendant pores, and three pairs of usurped ventral setae set on shield. Operculum as in *L. aella*. Anal shield elongate, rounded anteriorly; slightly denser laterally and around base of very long postanal seta; adanal setae shorter, but still reaching well beyond cribrum. Metapodal shields irregular, set outside two pairs of smaller plaques. Ventral cuticle with about 45 pairs of setae of increasing length posteriorly. Peritremes as in *L. aella*.

Legs with setation called for by Evans and Till (1965) for dermanyssids in general and for *L. echidninus* in particular. Coxa III with *pv* spur-like. Trochanters I–II with *al* strengthened, but still pointed; I with *pv2* spur-like; III–IV with *al* and *d* blunt. Seta *pd1* on femur I considerably elongate, and slightly so on II; *ad1* also slightly elongate on I. Genu I with *pd3* slightly elongate. Tarsi II–IV with *ad1* and *pd1* minute; II–III with *al1* and *av1* blunt. Tarsus I not examined. Coxae I with transverse apodemes almost meeting just behind tritosternal base.

*Male and immatures*.—Unknown.

*Notes*.—The hirsute *L. spatanges* is the only Australian species of *Laelaps* to show one pair of intercalary (*px*) setae on the dorsal shield; all the others have, if not the usual two pairs, none.

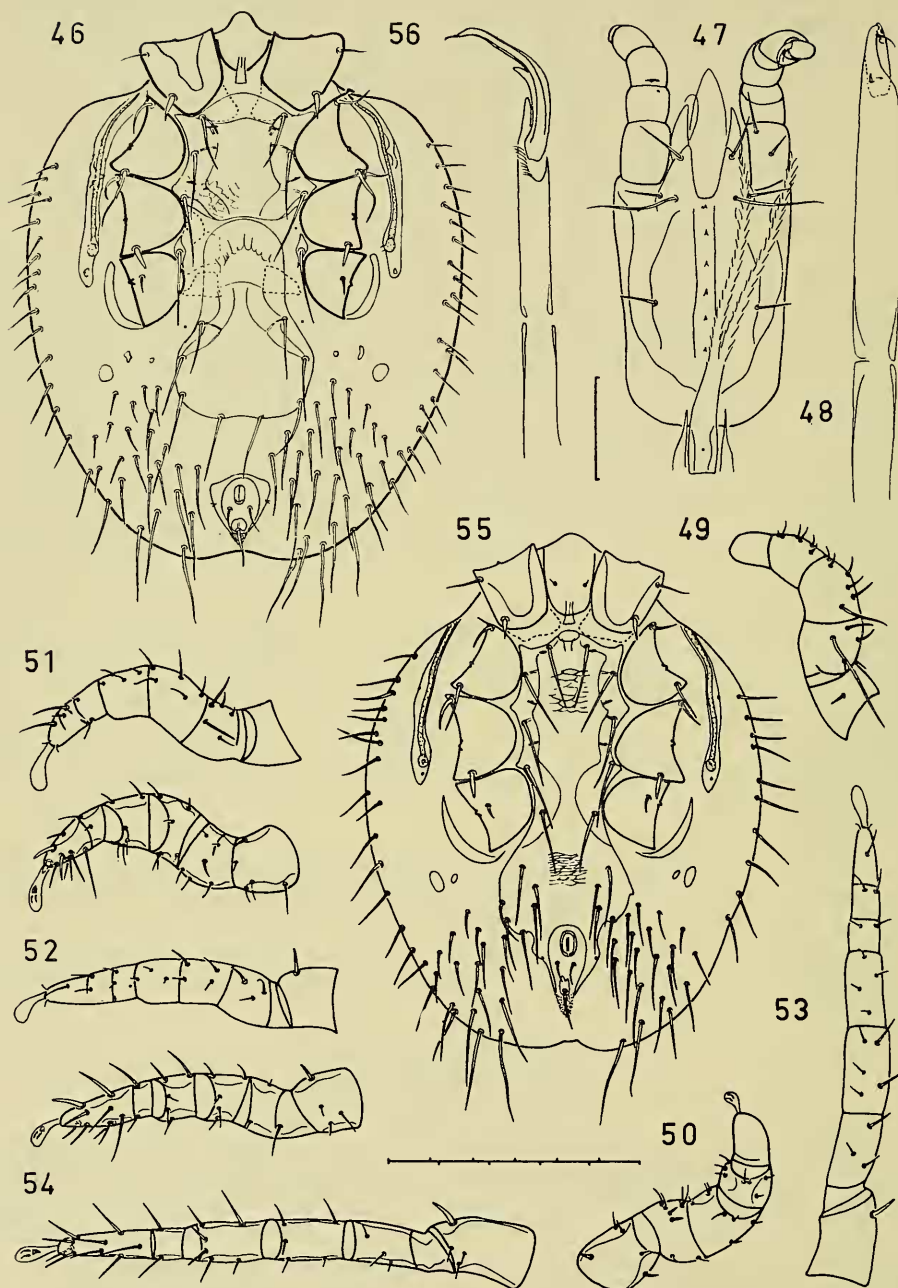
The specific name is a Greek noun ( $\sigma\pi\alpha\tau\alpha\gamma\gamma\eta\varsigma$ , a kind of sea-urchin), and stands in apposition to the generic name. It refers to the strong, outstanding setae of the idiosoma.

*Laelaps hapaloti* Hirst  
(Plate II, Figs 46–56)

*L. hapaloti* Hirst, 1931 (*sic*), *Proc. zool. Soc. Lond.*, 1931: 563.

*Material examined*.—All previously recorded material was re-examined. Also 67 ♀♀, 21 ♂♂, and one deutonymph from *Notomys mitchellii*, Pier Millan, between Ouyen and Sea Lake, Vic., 13.ii.1966, R.M.W. One ♀ and one ♂ from *N. mitchellii*, Lameroo, S.A., 12.ix.1966, P.F.A. Three ♀♀ and two ♂♂ from *N. mitchellii*, Kyancutta, Eyre Peninsula, S.A., 15.xi.1971, C. Matthews. One ♀ from *N. mitchellii*, W of Lake Eyre, S.A., 1957, P. F. Lawson.

Five ♀♀ from spinifex hopping mouse, *N. alexis* Thomas, Turner's Well, Ernabella Range, S.A., 19.vii.1966. Three ♀♀ from *N. alexis* (subspecies *everardensis* Finlayson), H.H.F. Four ♀♀ and one ♂ from *N. alexis*, Sandringham Station, 35 miles NW of Bedourie, Qd, 16–19.vi.1968, Meredith Happold (*née* Stanley).



Figs 46-54. *Laelaps hapaloti* ♀ from *Notomys mitchellii*. 46, Venter of idiosoma. 47, Capitulum. 48, Right chelicera in dorsal view. 49-50, Leg I (tibia-tarsus foreshortened). 51-52, Legs II-III. 53-54, Leg IV. Figs 55-56. *L. hapaloti* ♂ from *N. mitchellii*. 55, Venter of idiosoma. 56, Left chelicera in ventral view.

Seventeen ♀♀ and two ♂♂ from fawn-coloured hopping mouse, *N. cervinus* (Gould), Sandringham Station, Qd, 13-19.vi.1968, M.H.

Two ♀♀ from *Notomys* sp., Ooldea, S.A., H.H.F. Nine ♀♀, one ♂, and one deutonymph from *Notomys* sp., three miles E of Birdsville, Qd, 1.viii.1957, P.F.L.

Five ♀♀ and one ♂ from “?” Gould’s wattled bat, *Chalinolobus gouldii* (Gray) (Chiroptera: Vespertilionidae), Adelaide, S.A., 9.v.1932, M. Francis. The locality, date, and collector may well be correct, but the supposed host is certainly not.

*Notes.*—Womersley (1937, 1956) provided additional data for this briefly described species, stating on both occasions that the type-series could not be found. The location of the series collected by Rau is unknown; it is not in the British Museum (Natural History), London, where some of Hirst’s posthumous types are deposited (Hyatt, *in litt.*, 21.vii.1972—*Allothrombium wasseli* (sic), *Microtrombidium willungae*, *Spinturnix antipodianus* (sic), and *S. novaehollandiae*). But surely the series (eight ♀♀, three ♂♂) collected by Bellchambers is the second of the *two* mentioned by Hirst. Of these syntypes, I designate one ♀ as lectotype, see Arts 73 (c) and 74 (a).

Womersley also, on Finlayson’s advice, suggested the true host was a hopping mouse (genus *Notomys* Lesson). According to Ride (1970) and Aitken (*in litt.*, 12.ix.1972), the only *Notomys* in SE South Australia is *N. mitchellii*, but the latter adds that the type-locality (Humbug Scrub, in dry sclerophyll forest in the Mount Lofty Ranges) is—and was—a most unlikely locality for any species of *Notomys*, and probably in error. Womersley and later Domrow (1965) recorded specimens from *N. mitchellii* at Murray Bridge and Kiamal, and the latter realized the host of his earlier series (1958) from a “marsupial mouse” at Soudan must have been in error. The two new hosts listed above confirm Finlayson. (The specimens from *Pseudomys* Gray, Basedow Range, placed in Hirst’s species by Womersley are, in fact, a distinct new species described above.)

Domrow (1963*b*) showed that the setation of the dorsal shield of *L. hapaloti* was deficient, showing only 37, rather than the usual 39, pairs (supernumerary pairs *px*2-3 in the opisthotal series lacking, see Costa, 1961). This is the pattern commonly seen—in the long series from *N. mitchellii* from Pier Millan, *z*6 are present in 50, represented only on one side in 28, and absent in 10, specimens. Similar variation occurs in the type-series, but the lectotype was chosen to show *z*6 (one ♂ further shows one *px* on the left side). The 10 documented specimens from *N. alexis* show *z*6, while the 19 from *N. cervinus* lack them. All, however, clearly belong to a single species diagnosed by host-preference and the spinose basal seta on coxa I.

Fresh illustrations are given for the venter of the idiosoma of both sexes, and the setal patterns on the capitulum and legs are shown not to diverge from those of *L. echidninus*.

Hirst’s original spelling of the specific name (since he gave the alleged host-genus—*Hapalotis* Lichtenstein—correctly) is clearly a *lapsus*, and Womersley’s tacit emendation was justified (Arts 32 and 33).

As noted above, all Australian rodents, both native and introduced—*Rattus rattus* (Linnaeus), *R. norvegicus*, *R. exulans*, and *Mus musculus*—are murids. They fall into four distinct groups of genera, but their relationships are not well understood (Ride, 1970):

- (1) Bush-rats: *Rattus*.
- (2) Water-rat: *Hydromys* Geoffroy; and false swamp-rat: *Xeromys* Thomas.



- (3) A series of peculiarly Australian genera termed "old endemics"—tree-rats: *Mesembriomys* Palmer and *Conilurus* Ogilby; stick-nest rats: *Leporillus* Thomas; hopping-mice: *Notomys*; rock-rats: *Zyzomys*; broad-toothed rat: *Mastacomys*; and native-mice: *Pseudomys*.
- (4) Mosaic-tailed rats: *Melomys* and *Uromys*.

A variety of species of *Laelaps* are now known from these rodents. The six typical members of the *nuttalli* species-group (39 pairs of setae on the dorsal shield; sternal and genitoventral shields unexpanded; genitoventral setae and peritremes unabbreviated) already published are divisible as follows (Domrow, 1965):

- (a) Both setae on coxa I simple: *mackerrasi* and *southcotti* on various bush-rats and *Uromys*, respectively.
- (b) Distal seta on coxa I spur-like: *brevisetata* Domrow, *nuttalli* Hirst, and *assimilis* on various species of *Rattus*, *Melomys*, and *Uromys*.
- (c) Both setae on coxa I spur-like: *wasselli* Domrow on *Hydromys*.

These species of *Laelaps* with the simplest features have therefore been recorded from all four host-groups noted above, except the "old endemics". However, several series of *L. assimilis* (detailed above) have recently been taken from *Mastacomys*, which lives in close ecological association with, while being unrelated to, *R. lutreolus*.

There remain two species which, while largely resembling the *nuttalli* species-group, show expanded sternal and genitoventral shields. However, the lines (if any) dividing *Laelaps* and such annectant taxa as *Echinolaelaps* Ewing remain unclear (the latest statements are by Strandtmann and Mitchell, 1963; Strandtmann, 1963; Jameson, 1965; and Coffee and Retief, 1972), and the two species in question are retained in the *nuttalli* species-group. *L. rothschildi*, in fact, shows both setae on coxa I simple (Domrow, 1965, errs on this point), and is best considered in group (a). It is a species with characteristically short body setae, and peculiar to *Melomys* and *Uromys*. *L. echidninus* (the type-species of *Echinolaelaps*) fits in group (b) above, and occurs on various species of *Rattus*.

Four of the species of *Laelaps* previously recorded from "old endemics" form the distinct *finlaysoni* species-group (dorsal shield with only 35 pairs of setae; anterior two pairs of genitoventral setae and peritremes much abbreviated): *finlaysoni* Womersley on various species of *Pseudomys*, *albycia* Domrow on *P. fumeus* Brazenor, *calabyi* Domrow on *P. higginsii* (Trouessart), and *cybiala* Domrow on *Mastacomys*.

The fifth known species from "old endemics", *L. hapaloti* from the curious *Notomys*, forms a third monotypic species-group unique in showing 37 pairs of setae on the dorsal shield and the basal seta on coxa I spinose.

The three new species described above from "old endemics" may now be commented upon. This will necessitate some erosion of my original species-group diagnoses (Domrow, 1965), but this seems preferable, with many of the hosts little understood taxonomically and unexamined for parasites, to any more radical treatment. Particularly to be avoided at this stage is the erection of additional genus-group taxa. *L. aella* is so closely similar to *L. rothschildi* that it must also be placed in the *nuttalli* species-group, despite the difference in host-preference. The former is from *Pseudomys gracilicaudatus*, while the latter is restricted to *Melomys* and *Uromys*.

*L. pammorphus* (from *Zyzomys*) also has a full complement of dorsal setae, but shows incipient shortening of the peritremes and anterior two pairs of genitoventral setae. However, the reduction in both characters is not as marked as in the *finlaysoni* species-group, and the species further lacks the transparent areas on the dorsal shield characteristic of that group, and noted below. It is therefore assigned rather to the *nuttalli* species-group.

The hirsute *L. spatanges*, like *L. hapaloti*, is a species apart, distinct in showing 38 pairs of setae on the dorsal shield. The *spatanges* species-group is therefore erected to include it; it and the *nuttalli* species-group lack the four enlarged transparent areas on the dorsal shield around the pores in front of setae S4 and S5 so characteristic of the *finlaysoni* and *hapaloti* species-groups. Its hosts (*P. delicatulus* and *P. hermannsburgensis*) are currently assigned to *Pseudomys* s.l., but it should be noted that these two mouse-like forms were previously placed in *Leggadina* Thomas.

That relatively unmodified species of *Laelaps* are now known from the "old endemic" Australian rodents may indicate the latter are, in fact, but little modified members of the family Muridae despite their strict zoogeographical isolation. Further collecting aimed at the several still unsampled genera is necessary, and may throw light on the phylogeny both of these little-known hosts and their equally little-known parasites.

#### Genus NEOLAEAPS Hirst

*Neolaelaps* Hirst, 1926, *Proc. zool. Soc. Lond.*, 1926: 836. Type-species *Liponyssus magnistigmatus* Vitzthum, 1918.

#### *Neolaelaps spinosus* (Berlese)

*Leiognathus spinosus* Berlese, 1910, *Redia*, 6: 261.

*New host-record*.—Seven ♀♀ and one deutonymph (enclosing developing ♀) from flying fox, *Pteropus tonganus* Quoy and Gaimard (subspecies *geddiei* MacGillivray) (Chiroptera: Pteropodidae), Ipota, Eromanga, New Hebrides, 10.viii.1971. A. Agadjanian (RSPSE).

#### Genus DOMROWNYSSUS Evans and Till

*Domrownyssus* Evans and Till, 1966, *Bull. Br. Mus. nat. Hist.*, 14: 121. Type-species *Pneumonyssus dentatus* Domrow, 1961.

#### *Domrownyssus dentatus* (Domrow)

*P. dentatus* Domrow, 1961, *Proc. Linn. Soc. N.S.W.*, 86: 73.

*New host-record*.—Four protonymphs from brown antechinus, *Antechinus stuartii* Macleay, Melbourne, Vic., 29.viii.1972, Rosamond Shepherd.

*Notes*.—The adults of this interesting species remain unknown.

#### Genus EULAEAPS Berlese

*Eulaelaps* Berlese, 1903, *Zool. Anz.*, 27: 13. Type-species *Gamasus stabularis* Koch, 1839.

#### *Eulaelaps stabularis* (Koch)

*G. stabularis* Koch, 1839, *Deutschlands Crustaceen, Myriapoden und Arachniden*, 27: 1. Regensburg: Herrich-Schäffer.

*New Australian record*.—Eight ♀♀ and four ♂♂ from introduced mouse, *Mus musculus* Linnaeus (Muridae), Hunting Ground, Tas., 8.ii.1964, T. O. Wolfe.

*Notes*.—This mite is a common parasite of small mammals in the Holarctic and Oriental Regions.

#### Genus RAILLIETIA Trouessart

*Raillietia* Trouessart, 1902, *C. r. Séanc. Soc. Biol.*, 54: 1335. Type-species *Gamasus auris* Leidy, 1872.

#### *Raillietia australis* Domrow

*R. australis* Domrow, 1961, *Proc. Linn. Soc. N.S.W.*, 86: 75.

*Material examined*.—One ♀ from common wombat, *Vombatus ursinus* (Shaw) (Marsupialia: Vombatidae), near Taggerty, Vic., 26.vii.1971, R.S.

*Notes*.—This will confirm the original host-record.

## Genus AUSTRALOLAELAPS Womersley

*Australolaelaps* Womersley, 1956, *J. Linn. Soc.*, 42: 561. Type-species *A. mitchelli* Womersley, 1956.

*Australolaelaps mitchelli* Womersley  
(Figs 39–40a, 59–60)

*A. mitchelli* Womersley, 1956, *J. Linn. Soc.*, 42: 562.

*New host-records.*—Numerous specimens from red wallaby, *Macropus rufogriseus* (Desmarest) (Marsupialia: Macropodidae), Nile, Tas., vii.1972, B. L. Munday.

Four ♀♀ from swamp wallaby, *Wallabia bicolor* (Desmarest) (Macropodidae), Springhill, Daylesford, Vic., 1.iii.1972, R.S.

*Deutonymph.*—Basis capituli with *c* rather longer than half interval between them. Deutosternum with six denticles, mostly single. Hypostome with  $h3 > h1 > h2$ . Cornicles pale and elongate. Palpi with reduced setation, probably 2.3.6.8.9 (including two dorsodistal tibial rods). Claw bifid. Chelicerae slender, with fully formed edentate digits as in ♀; corona absent.

Idiosoma ovate, 330–380 $\mu$  long. Dorsal shield lozenge-shaped, but somewhat truncate posteriorly; surface almost textureless, and margins retracted laterally except for four small humeral plaques, leaving 12 pairs of lateral setae (*s*1–3, *s*6, *r*2–3, 5, *S*1–5) free in cuticle. These setae plus 22 pairs (*px*2, in fact, is absent as often as present) on shield make up 34 pairs typical of adult ♀ (see notes on *A. rosamondae*, n. sp.). Marginal cuticle with about nine pairs of setae. Peritremes abbreviated.

Tritosternum with base minutely dentate laterally; laciniae reaching forward almost to *h*3, weakly barbed. Intercoxal shield elongate-oval, almost textureless, and with five pairs of setae of decreasing length posteriorly; pores not detected. Adjoining cuticle textured near insertions of coxae II–IV. Anal shield as in ♀. Ventral cuticle with about 22 pairs of setae, subequal except for one stronger subposterior pair.

Legs with same setation as in ♀, *i.e.*, with normal dermanyssid pattern detailed by Evans and Till (1965), except that femur II is unidenticulate dorsally, 2–4/3–1 (genu IV in ♀♀ from *Macropus dorsalis* (Gray) with additional *pl* seta, 2–5/1–2). Coxa II with anterior seta present, but small and set on tubercle. Distal segments of legs with more or less obvious indications of future (adult) hooklets in positions detailed by Womersley (1956).

*Protonymph.*—Capitulum essentially as in deutonymph. Palpi with reduced setation, probably 1.3.5.8.9 (including two dorsodistal tibial rods).

Idiosoma ovate 280–315 $\mu$  long. Dorsal shield rounded anteriorly, sinuous laterally, and straight posteriorly; surface almost textureless; with 11 pairs of setae (*j*1–6, *z*2, 4–5, *S*4–5). Four pairs of mesonotal shieldlets present. Opisthonotal shield with five pairs of setae (*J*3, 5, *Z*3–5). Cuticle with 12 pairs of setae (*r*2–3, 5, *s*6, *J*1–2, *Z*1–2, *S*3–5, one extrascutal). Peritremes abbreviated.

Venter as in deutonymph except as follows: intercoxal shield with three pairs of subequal setae; cuticle with five pairs of setae.

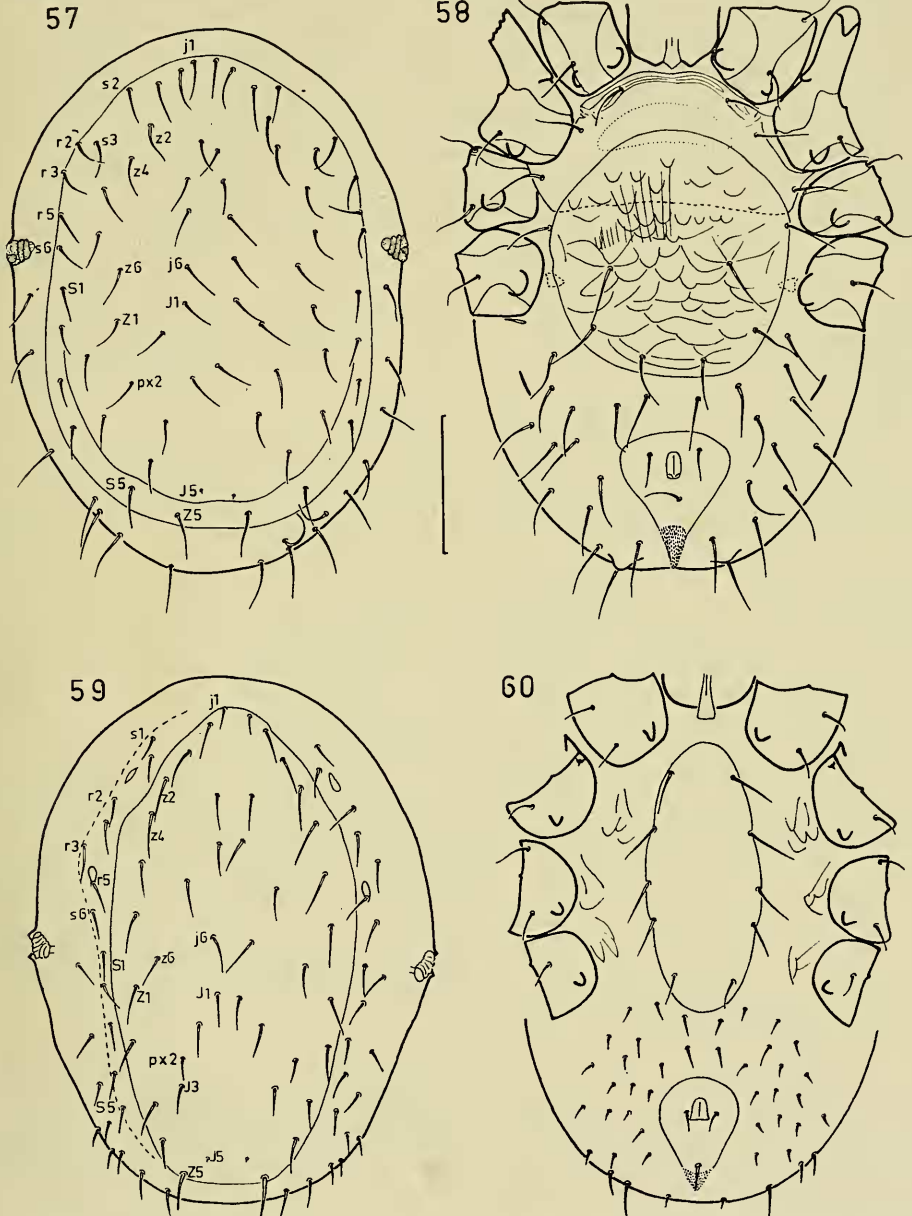
Legs with normal dermanyssid setation detailed by Evans and Till (1965).

*Australolaelaps rosamondae*, n. sp.  
(Figs 4–5, 34–37, 57–58)

*Types.*—Holotype ♀ (only known specimen) from *W. bicolor*, Springhill, Daylesford, Vic., 1.iii.1972, R.S. Deposited in ANIC.

*Female.*—Basis capituli stout, heavily sclerotized laterally and behind *h*2–3; with two strong ventrolateral bosses. Deutosternum with seven denticles in single file. Interval between *c* subequal to setae themselves;  $h3 > h2 > h1$ .

Cornicles not detected; hypostomal processes also diaphanous, extending forward to level of palpal tibiae. Epistome not detected. Palpi stout, with distal segments very short; trochanters armed with small ventrolateral boss. Setation reduced, probably 2.3.6.10.12 (including two dorsodistal tibial rods). Claws weak, apparently simple. Chelicerae retracted and details of distal quarter difficult to examine, but probably as figured, with very elongate digits.



Figs 57-58. *Australolaelaps rosamondae* ♀. 57, Dorsum of idiosoma. 58, Venter of idiosoma. Figs 59-60. *A. mitchelli* deutonymph from *Macropus rufogriseus*. 59, Dorsum of idiosoma. 60, Venter of idiosoma.

Idiosoma small, 395 $\mu$  long, 290 $\mu$  wide when mounted. Dorsal shield parallel-sided, but broadly rounded anteriorly and posteriorly; with surface largely shagreened (paired muscle insertions present), but with posterolateral band weakly sclerotized, seemingly leaving setae *Z*5 and *S*3-5 free in cuticle. Paired pores not discernible. Setae on shield arranged in 34 pairs, subequal except for minute *J*5. Marginal cuticle bearing about 17 setae. Stigmata and peritremes entirely dorsal, with latter apparently complexly chambered and extended mesially rather than anteriorly.

Base of trosternum roundly pointed posteriorly, but not strongly sclerotized as in some species of *Trichosuroaelaps* Womersley; laciniae weakly barbed, extending forward to *h*1. Sternal shield very broad, weakly sclerotized in general, but slightly denser discally; textureless except for few weak striations along biconvex anterior margin. Posterior margin shallowly concave; anterolateral cornua particularly weak, but posterolateral cornua distinct. Six sternal setae set on shield, but sternal pores not discernible. Metasternal complex represented only by two setae set in cuticle. Genital shield very broad, its surface (including broadly rounded and rayed operculum) marked with scale-like striae. Genital shield particularly, and two pairs of usurped ventral setae noticeably, set in from margin of shield. Pores accompanying genital setae not detected. Genital apodemes weak. Anal shield longer than broad, with rather straight anterior margin; almost textureless. Anus set well forward, its anterior margin level with bases of adanal setae; postanal seta of similar length, barely reaching distinct cribrum. Metapodal shields as such absent, but body wall indented behind line in this position. Exopodal shields represented only by merest remnant behind coxae IV. Opisthosoma with two small protuberances posteriorly and about 27 setae, of which four lie between genital and anal shields.

Legs sturdy, with short, well sclerotized segments. Setation as detailed by Evans and Till (1965) for dermanyssids in general, but seta *av* on coxa II obliterated by large ventrally-directed hook (which itself bears small basal boss), and femur II and genu IV unidifferent dorsally (2-4/3-1 and 2-4/1-1). Only seta *pd*2 on femora-genua I-II distinctly longer than other setae. Coxae with distinct bosses arranged 2.1.1.1; II without anterodorsal process. Trochanters-tarsi I and III-IV and tibia-tarsus II each with one to three bosses or crotchets ventrally. Trochanters with single boss dorsally. Pulvilli I and III probably broken off rather than absent; II and IV inserted ventrally.

*Notes.*—The peculiarly Australian hirstionyssine genus *Australolaelaps* comprises three known species from macropodid marsupials. The recorded hosts of *A. mitchelli* are all wallabies and pademelons (Macropodinae): *Macropus dorsalis*, *M. eugenii* (Desmarest), and *Thylogale stigmatica* Gould, to which *M. rufogriseus* and *W. bicolor* were added above. The other two species are from rat-kangaroos (Potoroinae), *A. greeni* Domrow (1966a) being known only from *Bettongia gaimardi* (Desmarest) in Tasmania, while *A. validipes* (Domrow, 1955) is common on *Potorous tridactylus* (Kerr) and *P. apicalis* (Gould) in coastal SE Australia and Tasmania, respectively. Domrow (1966a) tabulated the comparative morphology of these species.

The very distinct fourth species described above is from the only species now retained in the genus *Wallabia* Trouessart (Macropodinae). It agrees with *A. mitchelli* from macropodines in showing obsolescent peritremes, but is at once separable by the heavy hooks on coxae II, a character shared with *A. greeni* and *A. validipes* from potoroines. It further differs from all three in showing bosses on the capitulum and in the arrangement of the 34 pairs of setae on the dorsal shield.

Unreduced species of such genera as *Laelaps* and *Haemolaelaps* show 39 pairs of setae on the dorsal shield (Costa, 1961), comprising 22 pairs in a podonotal, and 17 pairs in an opisthonotal, series. As the patterns in *Australolaelaps*

are much reduced, it may be useful to analyse the deficiencies along the lines of a recent treatment of the closely related genus *Trichosurolaelaps* by Domrow (1972).

The least reduced podonotal pattern (19 pairs, *i.e.*,  $z1$ ,  $z3$ , and  $r4$  missing) occurs in both sexes of *A. mitchelli* and the ♂ of *A. validipes*. The ♀ of *A. rosamondae* (♂ unknown) and both sexes of *A. greeni* show 18 pairs, further lacking  $s1$ . The ♀ of *A. validipes* shows 17 pairs, further lacking  $j2$ .

The least reduced opisthonotal pattern (16 pairs, *i.e.*,  $px3$  missing) occurs in the ♀ of *A. rosamondae* (♂ unknown). Both sexes of *A. greeni* show 15 pairs, further lacking  $px2$ , though the ♀ of *A. mitchelli*, which also shows 15 pairs,\* lacks  $J4$  rather than  $px2$ . The ♂ of *A. mitchelli* shows 14 pairs, lacking both  $px2$  and  $J4$ . Both sexes of *A. validipes* show 13 pairs, further lacking  $S3$ .

Thus a similarity in the total counts of setae on the dorsal shield in two species may be superficial, reflecting a deficiency in the podonotal series in the one, but in the opisthonotal in the other.

The new taxon is dedicated to its collector, the specific name being a Latin noun in the genitive case.

#### Genus BEWSIELLA Domrow

*Bewsiella* Domrow, 1958, PROC. LINN. SOC. N.S.W., 82 : 352. Type-species *B. fledermaus* Domrow, 1958.

#### *Bewsiella fledermaus* Domrow

*B. fledermaus* Domrow, 1958, PROC. LINN. SOC. N.S.W., 82 : 353.

*New host-record*.—Many specimens from above tail of fawn horseshoe bat, *Hipposideros galeritus* Cantor (subspecies *cervinus* Gould) (Chiroptera : Hipposideridae), Montmartre Cave, Vila, Efate, New Hebrides, 29.vi.1971, A.G.M. (RSPSE).

#### Genus ORNITHONYSSUS Sambon

*Ornithonyssus* Sambon, 1928, *Ann. trop. Med. Parasit.*, 22 : 105. Type-species *Dermatomyssus sylviarum* Canestrini and Fanzago, 1877.

#### *Ornithonyssus bacoti* (Hirst)

*Leiognathus bacoti* Hirst, 1913, *Bull. ent. Res.*, 4 : 122.

One ♀ from sugar glider, *Petaurus breviceps* Waterhouse (Marsupialia : Petauridae), Vermont, Vic., 31.v.1962, R.M.W.\*

Laboratory infestation of eastern pigmy possum, *Cercartetus nanus* (Desmarest) (Marsupialia : Burramyidae), Melbourne, Vic., n.d., R.M.W. (animals originally captured in Victoria).

One ♀ from tuan, *Phascogale tapoatafa* (Meyer) (Dasyuridae), Lauriston, Vic., 8.ii.1964, R.M.W.\*

One ♀, two ♂♂, and two protonymphs from *Antechinus stuartii*, The Grampians, Vic., 20.vii.1963, R.M.W.\*

Laboratory infestation of dibbler, *Antechinus apicalis* (Gray), Canberra, A.C.T., 11.v.1967, Patricia Woolley (animals originally captured at Cheyne Beach, W.A.).

Laboratory infestation of guinea-pig, *Cavia porcellus* (Linnaeus) (Rodentia : Caviidae), Kila Kila, Papua, 4.x.1968, N. Talbot.

Six ♀♀ and two protonymphs from *Rattus fuscipes*, Buchan, Vic., 13.iv.1962, R.M.W.\* Two ♀♀ from *R. fuscipes*, Heathmere, Vic., 23.xi.1962, R.M.W.\*

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\* Domrow's (1966a) total count of 35 pairs for the female of *A. mitchelli* is true of the many specimens in which the second marginal seta shown behind the left stigma by Womersley (1956) is on the shield. However, other specimens show this seta free in the cuticle, and much more convincingly arranged Z and S series. It is therefore now considered an extrascutal seta.

Laboratory infestation of *Rattus lutreolus*, The Grampians, Vic., 28.xi.1962, R.M.W. ; two ♀♀ from *R. lutreolus*, Bridgewater Lake, Vic., 21.xi.1962, R.M.W.\*

Natural infestation of long-haired rat, *Rattus villosissimus* (Waite), Brunette Downs, N.T., n.d., J. L. Carstairs.

Two ♀♀ from *Notomys mitchellii*, Pier Millan, between Ouyen and Sea Lake, Vic., 13.ii.1966, R.M.W.\*

Six ♀♀ and four protonymphs from smokey mouse, *Pseudomys fumeus* Brazenor, The Grampians, Vic., 5.vi.1963, R.M.W.\*

*Notes.*—This is the tropical rat mite, and I am grateful to Mr. R. M. Warneke for advice that those records marked \* are “probably laboratory infestations”.

#### *Ornithonyssus sylviarum* (Canestrini and Fanzago)

*D. sylviarum* Canestrini and Fanzago, 1877, *Atti Ist. Veneto*, 5 : 124.

*New Australian record.*—Economic infestation of domestic fowl, *Gallus gallus* (Linnaeus) (Galliformes : Phasianidae), Parkville, Vic., x.1969, H. E. Harrigan and J. H. Arundel.

*New host-records.*—Many specimens from dusky wood-swallow, *Artamus cyanopterus* (Latham) (Passeriformes : Artamidae), Canberra, A.C.T., 5.i.1966, I. C. R. Rowley.

Five ♀♀, one ♂, and 12 protonymphs from fairy martin, *Hylochelidon ariel* (Gould) (Passeriformes : Hirundinidae), Salter's Spring, S.A., 12.xi.1966, M. Smyth.

Many specimens from laughing kookaburra, *Dacelo gigas* (Boddaert) (Coraciiformes : Alcedinidae), Evandale, Tas., 29.vi.1967, R.H.G.

Many specimens from nest of little grassbird, *Megalurus gramineus* (Gould) (Passeriformes : Sylviidae), Launceston, Tas., 15.x.1966, R.H.G.

*Notes.*—See Domrow (1966*b*) for other records of this introduced pest-species on native birds.

#### Genus RALLINYSSUS Strandtmann

*Rallinyssus* Strandtmann, 1948, *J. Parasit.*, 34 : 512. Type-species *R. caudistigmus* Strandtmann, 1948.

#### *Rallinyssus gallinulae* Fain

*R. gallinulae* Fain, 1960, *Bull. Annls Soc. r. ent. Belg.*, 96 : 295.

*New host-record.*—One ♀ from Lewin water-rail, *Rallus pectoralis* Temminck (Gruiformes : Rallidae), Myrtle Park, Tas., 23.iv.1971, R.H.G.

#### *Rallinyssus congolensis* Fain

*R. congolensis* Fain, 1956, *Revue Zool. Bot. afr.*, 53 : 396.

*New Australian record.*—One ♀ from spotless crane, *Porzana tabuensis* (Gmelin) (Rallidae), Flinders Island, Tas., 5.v.1972, R.H.G.

*Notes.*—Previously recorded from this host in the Philippines (Wilson, 1967 ; Domrow, 1969).

#### Genus LARINYSSUS Strandtmann

*Larinyssus* Strandtmann, 1948, *J. Parasit.*, 34 : 507. Type-species *L. orbicularis* Strandtmann, 1948.

#### *Larinyssus orbicularis* Strandtmann

*L. orbicularis* Strandtmann, 1948, *J. Parasit.*, 34 : 507.

*New host-record.*—Five ♀♀ from nasal cavities of silver gull, *Larus novaehollandiae* Stephens (Charadriiformes : Laridae), Lake Martin, near Cressy, Vic., viii.1973, T. O'Brien.

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